

Message Text

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ORIGIN FAA-00

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FOR US REP ICAO

E.O. 11652: N/A

TAGS: EAIR, ICAO, PORG

SUBJECT: RUNWAY THRESHOLD CLEARANCE HEIGHT FOR
ILS LANDING

THE FOLLOWING GUIDANCE CONCERNS ICAO COUNCIL'S CONSIDERA-
TION OF THE THRESHOLD CROSSING HEIGHTS (TCH) PROBLEMS
IN C-WP/6532, 6534, 6536, AND 6537:

1. ALTHOUGH FAA AGREES WITH INTENT OF THE PROPOSED
AMENDMENTS TO THE ANNEXES, IT HAS DIFFICULTY RELATING
WIDE-BODY AIRCRAFT TO TCH MATERIAL BASED ON 1958 B-707
PERFORMANCE. TODAY'S WIDE-BODY JET TRANSPORTS HAVE
INCREASED IN SIZE AND WEIGHT. WHEN WEIGHT, INERTIA (A
QUALITY) AND MASS (A QUANTITY) ARE MAGNIFIED THESE TWO
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PROPERTIES EXERT A STRONG INFLUENCE NOT ONLY ON THE
DESIGN OF THE AIRCRAFT'S STRUCTURE AND SYSTEMS BUT ALSO
ON ITS OPERATIONAL CHARACTERISTICS AND PROCEDURES. TO
COMPENSATE FOR THIS, TODAY'S WIDE-BODY JETS POSSESS
EXCELLENT HANDLING AND RESPONSE QUALITIES, THANKS TO
EXTENSIVE TESTING AND DEVELOPMENT OF FULL POWERED
CONTROLS, POSITIVE PITCH CONTROL, AND DIRECT LIFT

CONTROL ALONG WITH ADDITIONAL ENGINE POWER WHICH KEEPS MASS AND INERTIA UNDER BETTER CONTROL DURING APPROACH ESPECIALLY UNDER CONDITIONS OF WIND SHEAR AND CROSSWIND.

2. FURTHER, THE APPROACH TRAJECTORY ON THE WIDE-BODY IS VERY FINITE AS COMPARED TO THE B-707 AND DC-8. FOR EXAMPLE THE L-1011 PROCEEDS DOWN A 3 DEGREE GLIDE SLOPE WITH A NOSE UP ATTITUDE OF 6 TO 7 DEGREES AND ONLY AN ADDITIONAL INCREMENT OF ONE DEGREE IS INITIATED AT FLARE TO REDUCE THE SINK RATE AND CONSUMMATE THE LANDING MANEUVER; WHEREAS, THE OLDER JET TRANSPORTS APPROACH IN A ONE DEGREE NOSE UP ATTITUDE, FLARE AND THEN LAND IN A 3 TO 4 DEGREES NOSE UP ATTITUDE.

3. ON THE OTHER HAND, INCREASED MASS AND INERTIA REQUIRE THAT TOUCHDOWN BE ACCOMPLISHED AS SOON AS POSSIBLE WITHIN THE FIRST 1000-1500 FEET OF RUNWAY, AND THE TOUCHDOWN SHOULD BE A POSITIVE MANEUVER SO THAT THE RETARDING AND LIFT-DESTROYING FORCES ARE QUICKLY AVAILABLE TO DISSIPATE ALL THE ENERGY OF MOTION. (THIS IS ANOTHER WAY OF SAYING THAT THE GLIDEPATH AND ATTITUDE OF THE WIDE-BODY AIRCRAFT ARE MORE STABLE THAN THOSE OF EARLIER TRANSPORT AIRCRAFT AND IT IS THEREFORE NOT NECESSARY TO PROVIDE THE LARGE TCH TOLERANCE. HOWEVER, THE MASS AND INERTIA OF A WIDE-BODY AS COMPARED TO A B-707 REQUIRE THAT FOR STOPPING ITS WHEELS SHOULD BE ON THE GROUND AS

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SOON AS POSSIBLE.)

4. IN THE AUTOMATIC LANDING CASE, THRESHOLD CROSSING HEIGHT HAS LESS SIGNIFICANCE THAN IN THE MANUAL CASE WHERE PILOT-INDUCED DEVIATIONS MAY OCCUR. THEREFORE THE MORE SIGNIFICANT CRITERION IS THE TOUCHDOWN DISPERSIONS. ALL U.S. WIDE-BODY AIRPLANES WITH AUTO-LAND SYSTEMS MUST MEET THE FAA ESTABLISHED CRITERIA WHICH ASSURE LANDINGS ON THE RUNWAY WITHIN SPECIFIED LIMITS. THE AUTOMATIC LANDING SYSTEM UTILIZES INTELLIGENCE OTHER THAN THE GLIDESLOPE SIGNAL; I.E., RADIO ALTIMETER INFORMATION.

5. BECAUSE OF THE ABOVE AND IN CONSIDERATION OF FUTURE AIRCRAFT FAA DOES NOT SUPPORT THE PROPOSED RECOMMENDATION 4.2.7.2 TO ANNEX 6 AND STRONGLY RECOMMENDS A RECONSIDERATION OF THE PROPOSED ADDITION OF 8.5 TO ANNEX 8. IN THIS REGARD THERE ARE BEING SENT FOR DISTRIBUTION TO THE COUNCIL AND AIR NAVIGATION COMMISSION COPIES OF "A DISCUSSION OF THRESHOLD CROSSING HEIGHTS AND LANDINGS TECHNIQUES AS APPLIED TO THE L-1011" AS PRESENTED BY W.F. SMITH, CHIEF TRAINING PILOT, LOCKHEED, AT THE

FIFTH FLIGHT SEMINAR, HONG KONG, MAY 17-19, 1977. FAA
FLIGHT STANDARDS TECHNICAL PERSONNEL WILL BE AVAILABLE
TO ASSIST U. S. REP AS REQUIRED. VANCE

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Decaption Note:
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Disposition Case Number: n/a
Disposition Comment:
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